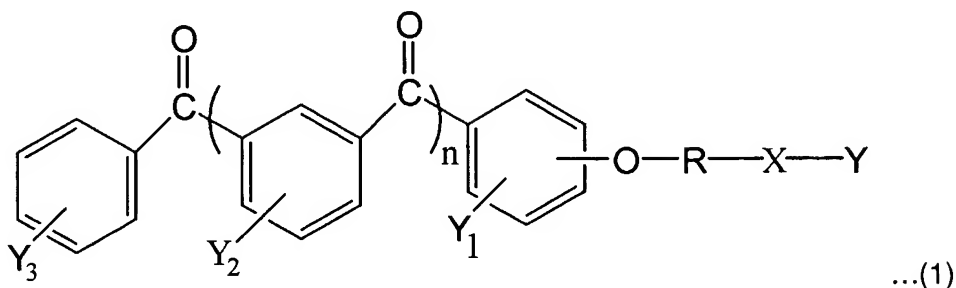


## CLAIMS

What is claimed is:

1. A lightfast colorant that is a benzophenone derivative of formula (1) below:



wherein  $Y_1$  is one selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, -SH, and a C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group;

each of  $Y_2$  and  $Y_3$  is independently selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group, -SH, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylalkyl group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroaryl group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylalkyl group;

$n$  is an integer from 0 to 6;

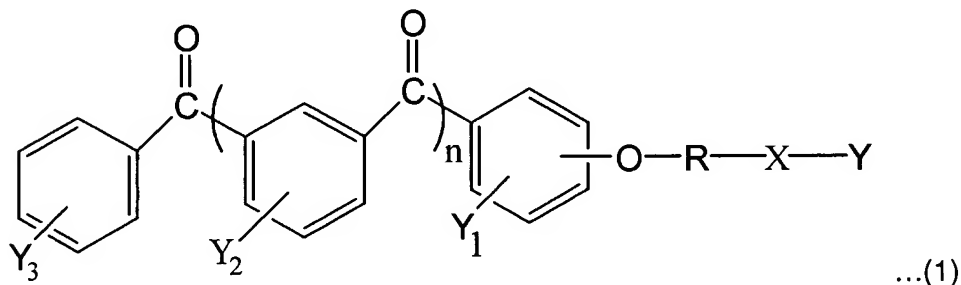
R is selected from the group consisting of a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkylene group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> arylene group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylenealkylene group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroarylene group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylenealkylene group;

X is a linker selected from the group consisting of -CONH-, -NHCO-, -COO-, -OCO-, -CO-, -O-, -S-, -SO<sub>2</sub>-, -SO<sub>3</sub>-, -O-P(=O)(OH)-O-, and -O-P(OH)-O-; and

Y is a colorant residue.

2. The lightfast colorant of claim 1, wherein said colorant residue Y is a moiety of one of a dye and a pigment used as a colorant, the moiety excludes said linker X, and said linker X binds the colorant and the benzophenone derivative.

3. A lightfast ink composition comprising:  
at least one lightfast colorant that is a benzophenone derivative of formula (1) below:



wherein  $Y_1$  is one selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, -SH, and a C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group;  
each of  $Y_2$  and  $Y_3$  is independently selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group, -SH, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylalkyl group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroaryl group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylalkyl group;

$n$  is an integer from 0 to 6;

R is selected from the group consisting of a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkylene group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> arylene group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylenealkylene group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroarylene group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylenealkylene group;

X is a linker selected from the group consisting of -CONH-, -NHCO-, -COO-, -OCO-, -CO-, -O-, -S-, -SO<sub>2</sub>-, -SO<sub>3</sub>-, -O-P(=O)(OH)-O-, and -O-P(OH)-O-; and

Y is a colorant residue; and

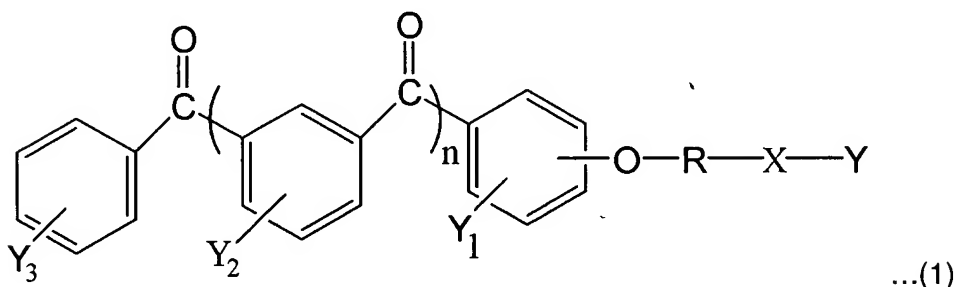
an aqueous medium.

4. The lightfast ink composition of claim 3, wherein the amount of the lightfast colorant is in the range of 0.1-20 parts by weight with respect to 100 parts by weight of the ink composition.

5. A lightfast ink composition comprising:

a colorant;

at least one lightfast colorant that is a benzophenone derivative of formula (1) below:



wherein  $Y_1$  is one selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, -SH, and a C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group;

each of  $Y_2$  and  $Y_3$  is independently selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group, -SH, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylalkyl group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroaryl group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylalkyl group;

$n$  is an integer from 0 to 6;

R is selected from the group consisting of a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkylene group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> arylene group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylenealkylene group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroarylene group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylenealkylene group;

X is a linker selected from the group consisting of -CONH-, -NHCO-, -COO-, -OCO-, -CO-, -O-, -S-, -SO<sub>2</sub>-, -SO<sub>3</sub>-, -O-P(=O)(OH)-O-, and -O-P(OH)-O-; and

Y is a colorant residue; and  
an aqueous medium.

6. The lightfast ink composition of claim 5, wherein the amount of the colorant is in the range of 1-25 parts by weight, the amount of the lightfast colorant is in the range of 0.1-20 parts by weight, and the total amount of the colorant and the lightfast colorant is in the range of 1.1-45 parts by weight, with respect to 100 parts by weight of the lightfast ink composition.

7. The lightfast ink composition of claim 3, wherein the aqueous medium is one of water and a mixture of 5-10% by weight of an organic solvent and 50-95% by weight of water.

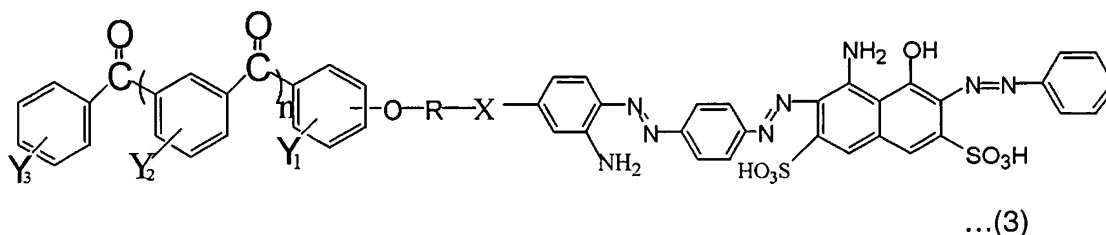
8. The lightfast ink composition of claim 7, wherein the organic solvent is selected from the group consisting of methyl alcohol, ethyl alcohol, n-propyl alcohol, isopropyl alcohol, n-butyl alcohol, sec-butyl alcohol, t-butyl alcohol, isobutyl alcohol, acetone, methylethyl ketone, diacetone alcohol, methyl acetate, ethyl acetate, ethyl lactate, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol, butylene glycol, 1,4-butane diol, 1,2,4-butane triol, 1,5-pentanediol, 1,2,6-hexane triol, hexylene glycol, glycerol, glycerol ethoxylate, trimethylolpropane ethoxylate, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, diethylene glycol methyl ether, diethylene glycol ethyl ether, triethylene glycol monomethyl ether, triethylene glycol monoethyl ether, 2-pyrrolidone, N-methyl-2-pyrrolidone, dimethyl sulfoxide, tetramethylene sulfone, and thioglycol.

9. The lightfast ink composition of claim 3, further comprising at least one additive selected from the group consisting of a dispersant, a viscosity adjuster, a surfactant, a storage stabilizer, and a wetting agent, wherein the amount of the at least one additive is in a range of 0.5-40 parts by weight with respect to 100 parts by weight of the lightfast ink composition.

10. The lightfast ink composition of claim 5, wherein the aqueous medium is one of water and a mixture of 5-10% by weight of an organic solvent and 50-95% by weight of water.

11. The lightfast ink composition of claim 5, further comprising at least one additive selected from the group consisting of a dispersant, a viscosity adjuster, a surfactant, a storage stabilizer, and a wetting agent, wherein the amount of the at least one additive is in a range of 0.5-40 parts by weight with respect to 100 parts by weight of the lightfast ink composition.

12. The lightfast ink composition of claim 3, comprising:  
at least one lightfast colorant of formula (3) below:



wherein Y<sub>1</sub> is one selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, -SH, and a C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group;  
each of Y<sub>2</sub> and Y<sub>3</sub> is independently selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group, -SH, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylalkyl group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroaryl group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylalkyl group;

*n* is an integer from 0 to 6;

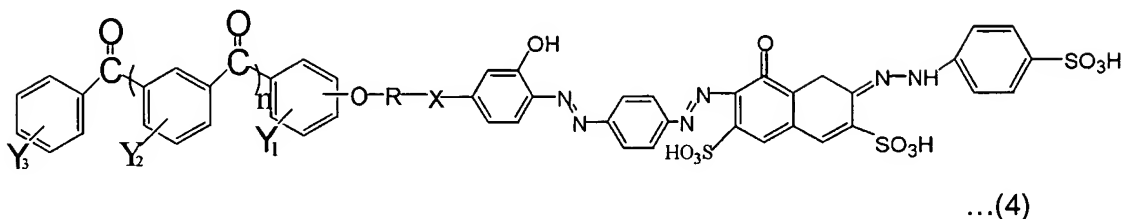
R is selected from the group consisting of a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkylene group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> arylene group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylenealkylene group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroarylene group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylenealkylene group;

X is a linker selected from the group consisting of -CONH-, -NHCO-, -COO-, -OCO-, -CO-, -O-, -S-, -SO<sub>2</sub>-, -SO<sub>3</sub>-, -O-P(=O)(OH)-O-, and -O-P(OH)-O-; and

Y is a colorant residue; and

an aqueous medium.

13. The lightfast ink composition of claim 3, comprising:  
at least one lightfast colorant of formula (4) below:



wherein  $Y_1$  is one selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, -SH, and a C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group;  
each of  $Y_2$  and  $Y_3$  is independently selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group, -SH, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylalkyl group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroaryl group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylalkyl group;

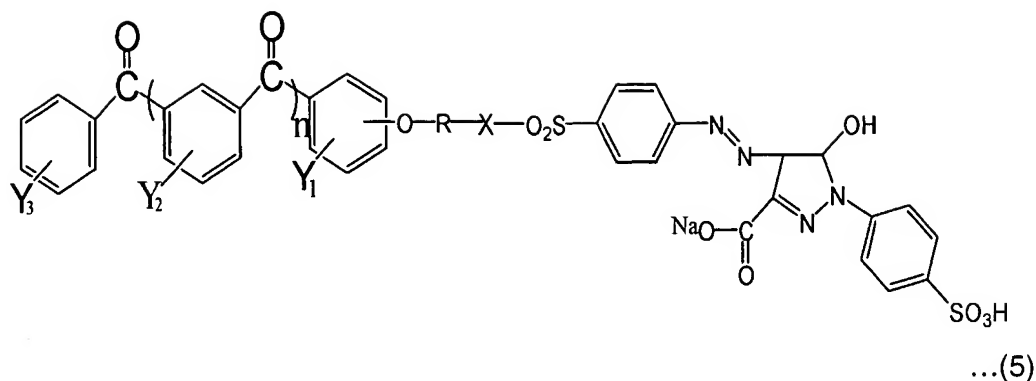
$n$  is an integer from 0 to 6;

R is selected from the group consisting of a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkylene group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> arylene group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylenealkylene group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroarylene group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylenealkylene group;

X is a linker selected from the group consisting of -CONH-, -NHCO-, -COO-, -OCO-, -CO-, -O-, -S-, -SO<sub>2</sub>-, -SO<sub>3</sub>-, -O-P(=O)(OH)-O-, and -O-P(OH)-O-; and

Y is a colorant residue; and  
an aqueous medium.

14. The lightfast ink composition of claim 3, comprising:  
at least one lightfast colorant of formula (5) below:



wherein  $Y_1$  is one selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, -SH, and a C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group;

each of  $Y_2$  and  $Y_3$  is independently selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group, -SH, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylalkyl group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroaryl group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylalkyl group;

$n$  is an integer from 0 to 6;

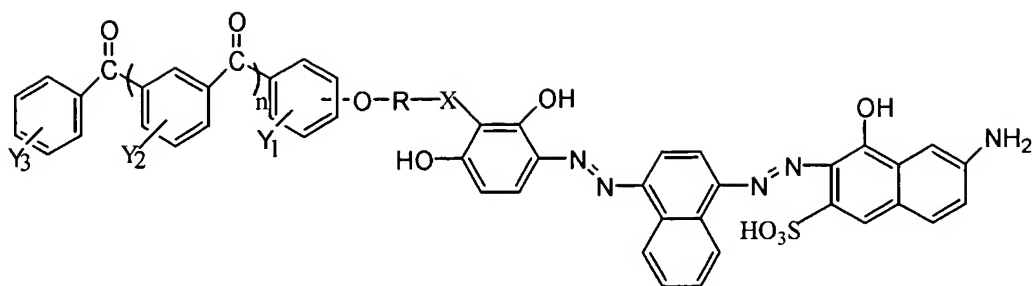
R is selected from the group consisting of a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkylene group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> arylene group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylenealkylene group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroarylene group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylenealkylene group;

X is a linker selected from the group consisting of -CONH-, -NHCO-, -COO-, -OCO-, -CO-, -O-, -S-, -SO<sub>2</sub>-, -SO<sub>3</sub>-, -O-P(=O)(OH)-O-, and -O-P(OH)-O-; and

Y is a colorant residue; and

an aqueous medium.

15. The lightfast ink composition of claim 3, comprising:  
at least one lightfast colorant of formula (6) below:



...(6)

wherein  $Y_1$  is one selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, -SH, and a C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group;

each of  $Y_2$  and  $Y_3$  is independently selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group, -SH, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylalkyl group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroaryl group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylalkyl group;

$n$  is an integer from 0 to 6;

R is selected from the group consisting of a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkylene group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> arylene group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylenealkylene group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroarylene group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylenealkylene group;

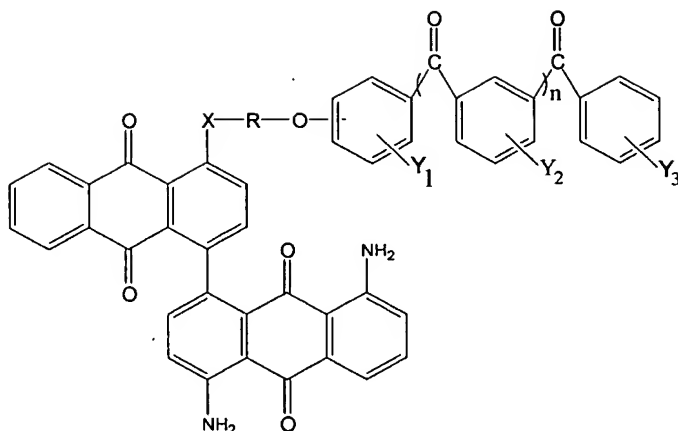
X is a linker selected from the group consisting of -CONH-, -NHCO-, -COO-, -OCO-, -CO-, -O-, -S-, -SO<sub>2</sub>-, -SO<sub>3</sub>-, -O-P(=O)(OH)-O-, and -O-P(OH)-O-; and

Y is a colorant residue; and

an aqueous medium.

16. The lightfast ink composition of claim 3, comprising:  
at least one lightfast colorant of formula (7) below:





...(7)

wherein  $Y_1$  is one selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, -SH, and a C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group;

each of  $Y_2$  and  $Y_3$  is independently selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group, -SH, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylalkyl group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroaryl group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylalkyl group;

$n$  is an integer from 0 to 6;

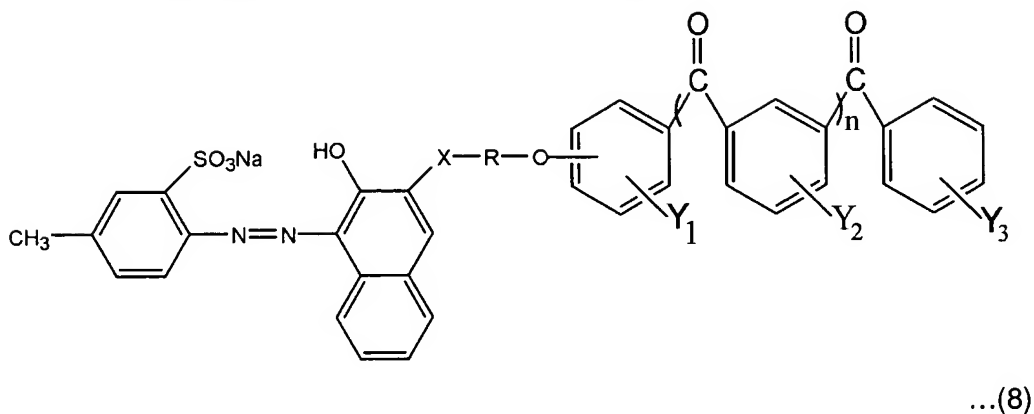
R is selected from the group consisting of a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkylene group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> arylene group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylenealkylene group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroarylene group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylenealkylene group;

X is a linker selected from the group consisting of -CONH-, -NHCO-, -COO-, -OCO-, -CO-, -O-, -S-, -SO<sub>2</sub>-, -SO<sub>3</sub>-, -O-P(=O)(OH)-O-, and -O-P(OH)-O-; and

Y is a colorant residue; and  
an aqueous medium.

17. The lightfast ink composition of claim 3, comprising:

at least one lightfast colorant of formula (8) below:



wherein  $Y_1$  is one selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, -SH, and a C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group;

each of  $Y_2$  and  $Y_3$  is independently selected from the group consisting of -H, -OH, -NH<sub>2</sub>, -NHR<sub>1</sub>, -N(R<sub>1</sub>)<sub>2</sub>, where R<sub>1</sub> is a C<sub>1</sub>-C<sub>6</sub> alkyl group, -SH, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynyl group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkyl group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylalkyl group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroaryl group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylalkyl group;

$n$  is an integer from 0 to 6;

R is selected from the group consisting of a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkenylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> alkynylene group, a substituted or unsubstituted C<sub>1</sub>-C<sub>30</sub> heteroalkylene group, a substituted or unsubstituted C<sub>6</sub>-C<sub>30</sub> arylene group, a substituted or unsubstituted C<sub>7</sub>-C<sub>30</sub> arylenealkylene group, a substituted or unsubstituted C<sub>3</sub>-C<sub>30</sub> heteroarylene group, and a substituted or unsubstituted C<sub>4</sub>-C<sub>30</sub> heteroarylenealkylene group;

X is a linker selected from the group consisting of -CONH-, -NHCO-, -COO-, -OCO-, -CO-, -O-, -S-, -SO<sub>2</sub>-, -SO<sub>3</sub>-, -O-P(=O)(OH)-O-, and -O-P(OH)-O-; and

Y is a colorant residue; and

an aqueous medium.